March 21, 2022

The Honorable Chair and Members of the
Hawai'i Public Utilities Commission
465 South King Street
Kekuanao'a Building, First Floor
Honolulu, Hawai'i 96813

Dear Commissioners:

Subject: Generation Update for Maui Electric Company, Limited

This letter is to inform the Commission of recent unanticipated news received by Hawaiian Electric Company, Inc. ("Hawaiian Electric" or "Company") that affects the forecasted end of life for the four 12.5MW Mitsubishi-MAN generating units on Maui. As discussed below, this new information impacts Maui's capacity planning and energy reserve margin, for which the Company will submit an updated assessment by April 8, 2022 in Docket No. 2021-0024.

Because of supply chain risks and concerns, Hawaiian Electric has been reaching out to certain suppliers to determine spare parts availability and what lead times on materials should currently be expected. Where possible and prudent, Hawaiian Electric is acquiring spare parts and materials in advance of schedules based on pre-pandemic inventory practices.

In one case, Hawaiian Electric reached out to Mitsubishi Heavy Industries Engine & Turbocharger ("MHIET") as part of the process to procure additional spare parts for Maalaea Units 10 thru 13 (M10 thru M13). In response, on March 2, 2022, the Chicago office of MHIET's American subsidiary informed Hawaiian Electric that they might no longer be able to assure supply parts for these reciprocating engines. Specifically, it stated:

> *MHIET hasn't had the specific timeline to the end of parts supply so far. We surely would like to keep the parts supply to MECO for the engines as much as we can. However, the engines have manufactured for more than about 40 years ago, some engine-related parts might no longer be available for supply due to the business closing at our suppliers and if there is no alternative way to produce parts anymore. So in that case we will officially inform you that the parts cannot be supplied as an response to your each RFQ.*

This was not a response Hawaiian Electric anticipated. But it was also a somewhat ambiguous response. Since receiving this response, Hawaiian Electric has made inquiries to clarify its meaning.[1] Hawaiian Electric was able to clarify the last sentence of the above was intended to convey that MHIET cannot identify what parts it can supply without first receiving a Request for Quote ("RFQ"). Hawaiian Electric will be providing MHIET that RFQ within the next two weeks.

[1] Hawaiian Electric no longer has direct communications with MHIET in Japan, who has the lead in determining supply part availability. All communications and purchases go through MHIET's American subsidiary Mitsubishi Turbocharger and Engine America (MTEA). This can lead to delayed responses that at times require additional clarification.

Nevertheless, the Company believes the fact that the response from MHIET was not an unequivocal commitment to continue to provide parts is enough of a concern to warrant the Company to revisit Maui's capacity planning and energy reserve margin. Some further context on these parts and the M10 thru M13 units is important.

Unlike most other generating units owned and operated by Hawaiian Electric, there are no readily available alternative suppliers for most parts needed to service these engines on a regular basis. Because Mitsubishi obtained a license for their design from MAN, some parts (e.g., turbochargers with adapters) may be available from MAN. However, the critical parts needed for regular 12,000 run-hour major overhauls are unique to the Mitsubishi version of these engines. Unfortunately, there are very few engines of this make and model still in service. As such, Hawaiian Electric is not aware of secondary markets that can readily supply parts in the future.

While Hawaiian Electric was surprised by the news that MHIET would not guarantee parts supply, efforts to increase the Company's stock of spare parts have been ongoing for some time already since lead time for parts had been increasing. The result is that there are enough spare parts on hand to perform one additional 12,000 run-hour major overhaul for each engine. Based on current operation, it takes approximately 30 months to accumulate 12,000 run-hours on each engine. History has shown that engine reliability will start to degrade around 12,000 run-hours or soon thereafter. Therefore, it should be assumed that each engine will be at or near its end of life approximately 2.5 years after its next major overhaul under the current operating scenario. That time could be extended if additional resources are added to the system that would allow less run time for Maalaea Units 10 thru 13. Figure 1 below is an illustration of when end of life for each engine may be reached.

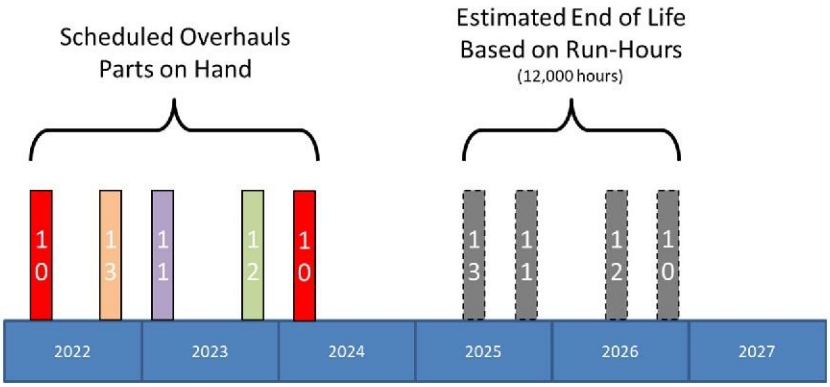

Figure 1 – Estimated End of Life for M10 thru 13

Hawaiian Electric continues to work with MHIET in an attempt to obtain additional spare parts for at least two additional overhauls, which would extend the lives of M13 and M11. However, the uncertain circumstances must be considered, and it is no longer prudent to safely assume continued operation of these units past the dates shown above in capacity planning for Maui. As one example, it may not be prudent to retire Kahului Units 1 thru 4 prior to sufficient capacity being in service to replace the 36MW they represent as well as the 50MW supplied by M10 thru

M13. That said, to comply with Regional Haze rules, it is anticipated that the Kahului Units may need to be retired by the end of 2027.[2]

Hawaiian Electric is evaluating whether the Stage 1 and 2 resources in their entirety along with predicted Demand Response and DER program capacity will be sufficient replacement resources for the 86MW of firm generation provided by M10 thru 13 and Kahului Units 1 thru 4. Preliminary results indicate that some amount of firm conventional generating capacity will be needed to supplement what is already planned. A subset of the Stage 1 and 2 projects is anticipated to be sufficient to replace the capacity of M10 thru 13. Fortunately, those projects are slated to be in service in 2024, prior to the anticipated end of life for M10 thru 13. Hawaiian Electric believes it is prudent to pursue installation by 2024 of all Stage 1 and 2 projects.

Action Plan

This new information confirms and amplifies the previously understood urgency to take actions to ensure continued reliability of electricity supply for the island of Maui. The following is a list of actions that are currently underway or that will soon begin. This list is not intended to be exhaustive, and it is likely that additional steps will be prudent as more information is gathered.

- Continue to explore ways to extend the lives of units M10 thru M13. Currently trying to obtain additional spare parts, examining whether the next scheduled overhaul for each unit can be deferred by a few months, and analyzing how new resources in 2024 (Stage 1 and 2 projects) might reduce run-hours.
- Continue to work with developers of Stage 1 and 2 projects to help ensure their projects are installed no later than 2024. If approved by the Commission, proceed urgently with installation of the 40MW Waena storage project selected via the Stage 2 RFP.
- Analyze needs beyond what is already planned via previous RFP selections and approved programs. Anticipating the need to urgently issue an RFP for additional resources to be in place by 2027.
- As a contingency plan, start the process for long-lead permits associated with new firm generation up to approximately 30MW or 40MW[3] of engines at Waena to enable an in-service date of 2027. In particular, air permits and an Environmental Review.
- As previously noted, seek approval to establish a Battery Bonus program for Maui, while also pursuing an RFP for grid services.

[2] Recent information from the Environmental Protection Agency indicates that Haleakala's visibility has returned to its natural visibility condition, which is the goal of the Regional Haze rules. Therefore, Hawaiian Electric plans to revisit with the Department of Health whether there is need to take action associated with Kahului Units 1-4 with respect to Regional Haze.

[3] The permit will likely be for multiple smaller reciprocating engines (2MW to 4MW) such that any actual project can be scaled to meet the determined needs without overbuilding.

Sincerely,

/s/ Jim Alberts

Jim Alberts
Senior Vice President Operations, Chief Operations Officer

c: Division of Consumer Advocacy

The foregoing document was electronically filed with the State of Hawaii Public Utilities Commission's Document Management System (DMS).